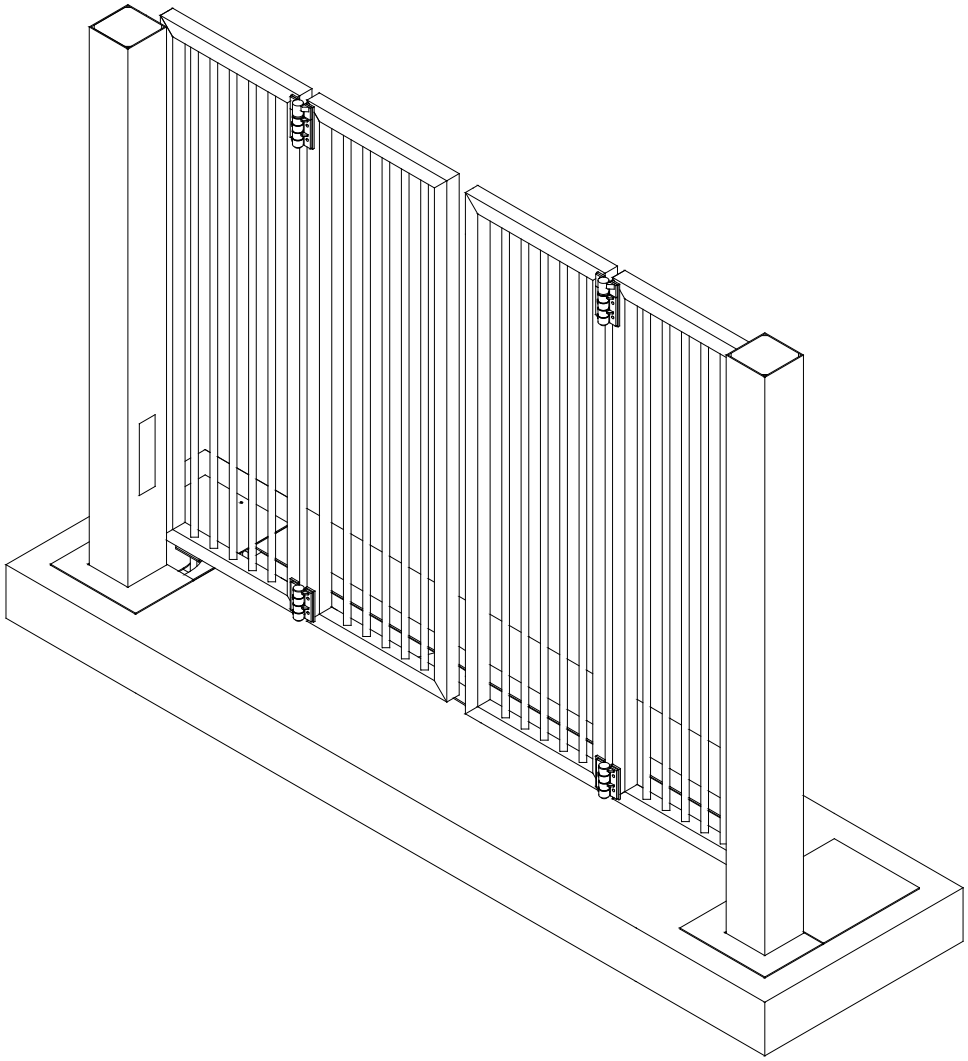
Speedgate OA

User manual, Version 1.5



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Pevac Speedgate OA

With the Speedgate OA, Pevac B.V. has produced a high quality product for optimal object and terrain security. A steel quick-folding gate can open or close the entrance in only a few seconds. When installed in the line of fencing, the Speedgate OA ensures hermetic sealing of incoming and outgoing gates. If opened, there is no limitation in the traffics height.

The Speedgate OA is hydraulically driven with a special designed proportional unit.
The hydraulic drive is electrically operated.
There are a great number of possibilities for operation, from simple, manual operation to advanced entry control systems.

Declaration of agreement

The Speedgate OA is accompanied by a manufacturer's declaration.
With this, the product complies with the New Approach guidelines, which guarantees optimal safety. The declaration of conformance is included at the back of this manual.

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1 USE OF THE INSTALLATION MANUAL

The manual is intended for persons who are responsible for installing, operating and maintaining the Speedgate OA. This manual describes how the Speedgate OA can be safely installed, used and maintained.

Read the manual completely before installing or using the Speedgate OA.

Keep this manual in the control room.

In this manual the following pictograms and symbols are used:

Warning
Danger of injury to operator or bystanders, or danger of major damage to the Speedgate OA or to other objects. Follow the instructions carefully.

Danger
Life threatening danger or danger of serious injury. Follow the instructions carefully.

Note
Tip to make work easier.

Environment
Remark regarding the environmental impact of the Speedgate OA in operation and of the Speedgate OA should be disposed of.

Action
Actions to be taken.

This manual has been drafted with the utmost care. Pevac B.V. is not liable for damage that occurs as a result of any inaccuracies in this manual. We request that you inform us, as a matter of urgency, of any inaccuracies you may find.

1.1 Related documentation

As well as this manual for the Speedgate OA, there are also the following documents:

- Maintenance book Speedgate OA.
- Log card.
- Parts book.
- Hydraulic drive unit manual.
- Controller manual.

1.2 Use according to destination

The Speedgate OA may NOT be used on a public road. In terrains where the Speedgate OA has been installed, a maximum speed of 30 km/hour must be observed.
The Speedgate OA may not be used for moped riders, cyclists, motorcycle riders and pedestrians.

The Speedgate OA can be used in the following situations:

Security of amongst others:

- Industrial area's
- Storage and cross-shipping companies;
- Financial institutions;
- Auto(dealership) companies;
- Embassy's
- Lease companies.

Any other or extended use does not comply with the intended use. Use and install the Speedgate OA only when it is in technically perfect condition.

2 SAFETY

In this chapter, the safety aspects of the Pevac Speedgate OA are discussed.
Read this chapter thoroughly before use of the Speedgate OA.

2.1 Safety and health risk

The Speedgate OA has been safely constructed. At each installation in a certain environment, new risks can occur that can be different for each installation. The customer must carefully assess beforehand what risks can occur after the installation. In general the following risks can be distinguished:

- Collision with the Speedgate OA due to bad visibility;
- Collision due to excessive speed;
- Possible injury to moped riders, cyclists, motorcycle riders and pedestrians because they are too close to the Speedgate OA.

During the design of the Speedgate OA, safety precautions were taken to reduce these risks as much as possible. By taking account of the above risks and by following the safety regulations, these risks are limited even more.

2.2 Safety precautions of the Speedgate OA

To make the use of the Speedgate OA as safe as possible, the following safety measures have been taken:

- To prevent the entrapment of body parts, the Speedgate OA does not have any protruding parts;
- To prevent the entrapment of body parts, the Speedgate OA has as last openings as possible;
- The opening of the Speedgate OA is supplied with an photo-electric sensor which detects is any object is in-between the columns before closing;
- The wings of the Speedgate OA are supplied with several safety edges, for opening and closing;

2.3 Recommended environmental safety provisions

Warning
Environmental measures must be taken for the safe use of the Speedgate OA. The necessary measures will be different for each situation. In general the following measures will contribute to decreasing risks for road users.

Danger
The environment must be adapted in such a way that a high speed (higher than 30 km/hour) is hard to reach, for example by bumps in the road surface, an S-curve (with unobstructed view) in the road and maximum speed signs.

Danger
In order to ensure the safety of moped riders, cyclists, motorcycle riders and pedestrians, they must not be permitted in the vicinity of the Speedgate OA. For this group of road-users it's necessary to install a pedestrian-gate in the surrounding area. Establishing a danger zone with the help of traffic signs, text signs, pictograms, road markings and the physical separation of traffic flows can facilitate this.

Warning
Traffic lights, warning boards, and lighting should be placed in the vicinity to insure good visibility of the Speedgate OA.

Danger
If a traffic light is to be utilized, the green light may only be given if the wings of the Speedgate OA ore fully opened: this indicates that the passage is completely unobstructed. The traffic light must change to red several seconds before the Speedgate OA starts closing in order to give road users sufficient time to stop. The traffic light must remain red while the Speedgate OA is moving and while it is closed.

Warning
It is forbidden to stop or to park in-between the wings of the Speedgate OA. Traffic signs can also indicate this.

Note
It is advisable to make recordings with a security camera in the vicinity of the Speedgate OA.
This has the advantage of providing a record of a possible collision and allowing a determination of the possible cause. Furthermore, sabotage can be witnessed and recorded.

Warning
The obstacle must not rise if vehicles are in-between the wings of the Speedgate OA. To this end, detection systems such as detection strips in the road surface, photocells, or cameras can be used.

Warning
Fault detection can be used. In the event of a fault, the traffic light must change to red and remain red. Additionally, in that case, a signal must be sent to the central control room.

2.4 Safety precautions and maintenance

- Check the Speedgate OA on every first working day of the week for proper functioning.
- Check the visibility of the Speedgate OA every first working day.
- Carry out maintenance in accordance with the specifications in the maintenance and repair logbook.
- During installation and maintenance work, the drive must be disengaged.
- The Speedgate OA can only be operated by personnel who are adequately trained and familiar with the operation.

3 GUARANTEE

Guarantee is given according to the conditions stated in the “Conditions of the Metal Union”. Pevac BV, however, gives a guarantee for a period of 24 months instead of 6 months, as stated in 14.1 of the conditions of the metal union. A copy of these conditions can be obtained from Pevac BV.

The Speedgate OA has been manufactured with the utmost care. Therefore, Pevac BV gives the initial user a guarantee for 24 months, taken from the invoice date.

The guarantee implies that Pevac BV makes replacement parts available, free of charge, for all parts that show any shortcomings, within the term mentioned, due to imperfections of the material or manufacture.

Excluded from guarantee are all parts that should be replaced according to the maintenance schedule and the safety edges. The safety-edges always have to be send to Pevac BV for inspection of the cause of the failure.

The guarantee concerns the replacement of defective parts, exclusive of installation, at the discretion of Pevac BV.

Pevac BV explicitly rejects all further claims for compensation of damage, of any nature.
The guarantee does not apply for faults that have occurred due to injudicious, incorrect or careless handling, incorrect use, incorrect connection or connection by unqualified parties.

The guarantee expires if:

- Unauthorised parties have carried out repairs or maintenance to the installation;
- The installation was not used in accordance with the normal intended use or was used under abnormal circumstances;
- It cannot be shown that the installation was inspected by a qualified installer or service organisation in accordance with the maintenance schedule;
- The complaint is not immediately reported to a qualified installer or service organisation;
- Repairs are carried out without the prior permission of Pevac BV;
- Parts are replaced without prior permission from Pevac BV;
- Original parts are not used during repair;
- The damage was caused by use other than mentioned in § 1.2 “Use according to intended purpose”;
- Claims do not take place within eight days after the complaint was discovered or reasonably should have been discovered.

The repair or replacement of parts during the period of guarantee does not result in the extension of this term. Replaced parts become property of Pevac BV.

If necessary, Pevac BV can require that the parts are shipped postage-paid to Pevac BV. Postage-paid return is made if the repair was carried out under guarantee.

Excluded from guarantee is all damage that has occurred to the Speedgate OA by persons, vehicles, or adjacent moveable or immovable property.

3.1 Liability

Pevac BV accepts no liability for damage or physical injury that occurs due to:

- Not following the instructions in this manual;
- Carelessness during the use, maintenance, repositioning, installing, dismantling or repair of the Speedgate OA;
- Use that is not in compliance with the intended purpose.

4 MACHINE DESCRIPTION

The Speedgate OA consists of a steel frame that is filled with concrete on site. In the foundation are the connections for the jacket sleeve and the drain tubes. These connections are shown on drawing Fig. 4.1. The function of the openings is mentioned in the table 4.1.

Connections of the foundation:

No	Intended for	Function
A	Drain tube	Rain water drainage connection to the sewer
B	Conduit	Feed-through for controller cable and hydraulic
C	Hoisting	Feed-through hoisting straps or chains

Table 4.1: Function of openings in foundation

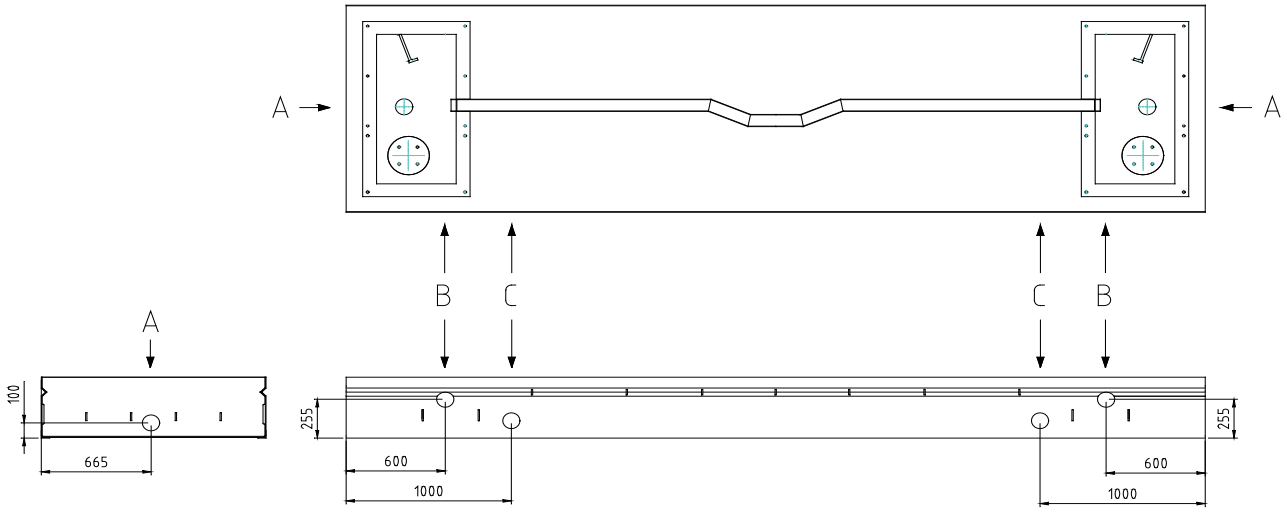


Figure 4.1: Connections in foundation

On the foundation, two columns are installed, with a drive-axle inside. Below the column, inside the pits in the foundation, the hydraulic cylinders are installed. The cylinders are connected to the drive-axle. The outer wings are mounted to the drive-axle. The inner wings are mounted to the outer wings with hinges.

4.1 Technical data

Figure 4.2 shows the standard dimensions of the Speedgate OA. The actual dimensions are shown in the table below.

Sizes of Speedgate OA:

Type	A	B	C	D	E
2000 OA 2500	2500 mm	3450 mm	3700 mm	845 mm	2090 mm
2000 OA 3000	3000 mm	3950 mm	4200 mm	1095 mm	2090 mm
2000 OA 3500	3500 mm	4450 mm	4700 mm	1345 mm	2090 mm
2000 OA 4000	4000 mm	4950 mm	5200 mm	1595 mm	2090 mm
2000 OA 4500	4500 mm	5450 mm	5700 mm	1845 mm	2090 mm
2000 OA 5000	5000 mm	5950 mm	6200 mm	2095 mm	2090 mm
2000 OA 5500	5500 mm	6450 mm	6700 mm	2345 mm	2090 mm
2000 OA 6000	6000 mm	6950 mm	7200 mm	2595 mm	2090 mm
2000 OA 6500	6500 mm	7450 mm	7700 mm	2845 mm	2090 mm
2000 OA 7000	7000 mm	7950 mm	8200 mm	3095 mm	2090 mm
2500 OA 2500	2500 mm	3450 mm	3700 mm	845 mm	2590 mm
2500 OA 3000	3000 mm	3950 mm	4200 mm	1095 mm	2590 mm
2500 OA 3500	3500 mm	4450 mm	4700 mm	1345 mm	2590 mm
2500 OA 4000	4000 mm	4950 mm	5200 mm	1595 mm	2590 mm
2500 OA 4500	4500 mm	5450 mm	5700 mm	1845 mm	2590 mm
2500 OA 5000	5000 mm	5950 mm	6200 mm	2095 mm	2590 mm
2500 OA 5500	5500 mm	6450 mm	6700 mm	2345 mm	2590 mm
2500 OA 6000	6000 mm	6950 mm	7200 mm	2595 mm	2590 mm
2500 OA 6500	6500 mm	7450 mm	7700 mm	2845 mm	2590 mm
2500 OA 7000	7000 mm	7950 mm	8200 mm	3095 mm	2590 mm
3000 OA 2500	2500 mm	3450 mm	3700 mm	845 mm	3090 mm
3000 OA 3000	3000 mm	3950 mm	4200 mm	1095 mm	3090 mm
3000 OA 3500	3500 mm	4450 mm	4700 mm	1345 mm	3090 mm
3000 OA 4000	4000 mm	4950 mm	5200 mm	1595 mm	3090 mm
3000 OA 4500	4500 mm	5450 mm	5700 mm	1845 mm	3090 mm
3000 OA 5000	5000 mm	5950 mm	6200 mm	2095 mm	3090 mm
3000 OA 5500	5500 mm	6450 mm	6700 mm	2345 mm	3090 mm
3000 OA 6000	6000 mm	6950 mm	7200 mm	2595 mm	3090 mm
3000 OA 6500	6500 mm	7450 mm	7700 mm	2845 mm	3090 mm
3000 OA 7000	7000 mm	7950 mm	8200 mm	3095 mm	3090 mm

Table 4.2: Sizes of the Speedgate OA

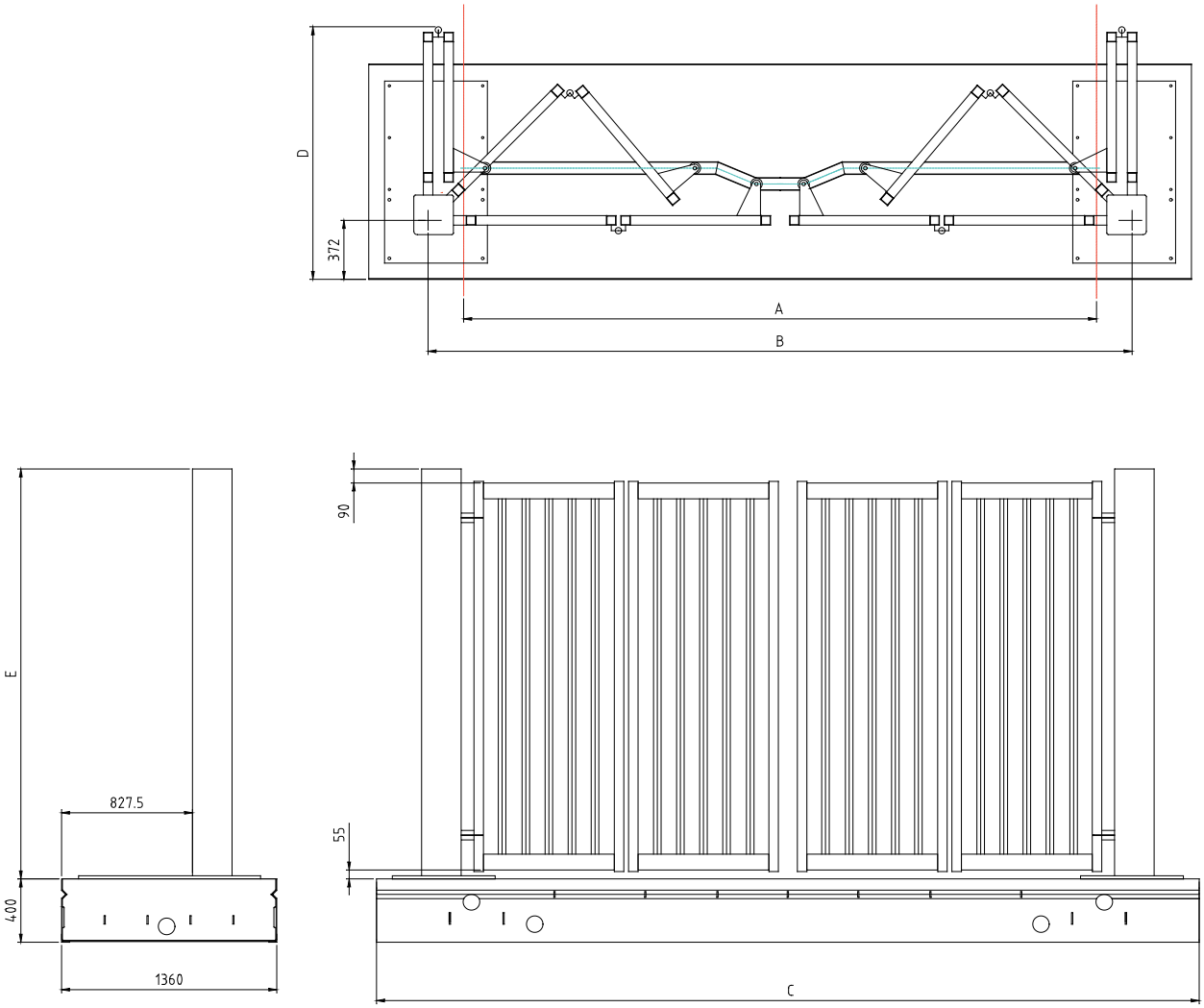


Figure 4.2: Over all dimmensions of the Speedgate OA

Sizes and weights of foundation:

Type	A	B	C	Weight (with concrete)
XXXX OA 2500	3700 mm	1360 mm	400 mm	4800 kg
XXXX OA 3000	4200 mm	1360 mm	400 mm	5450 kg
XXXX OA 3500	4700 mm	1360 mm	400 mm	6100 kg
XXXX OA 4000	5200 mm	1360 mm	400 mm	6750 kg
XXXX OA 4500	5700 mm	1360 mm	400 mm	7400 kg
XXXX OA 5000	6200 mm	1360 mm	400 mm	8050 kg
XXXX OA 5500	6700 mm	1360 mm	400 mm	8700 kg
XXXX OA 6000	7200 mm	1360 mm	400 mm	9400 kg
XXXX OA 6500	7700 mm	1360 mm	400 mm	10050 kg
XXXX OA 7000	8200 mm	1360 mm	400 mm	10700 kg

Table 4.3: Sizes and weights of foundation.

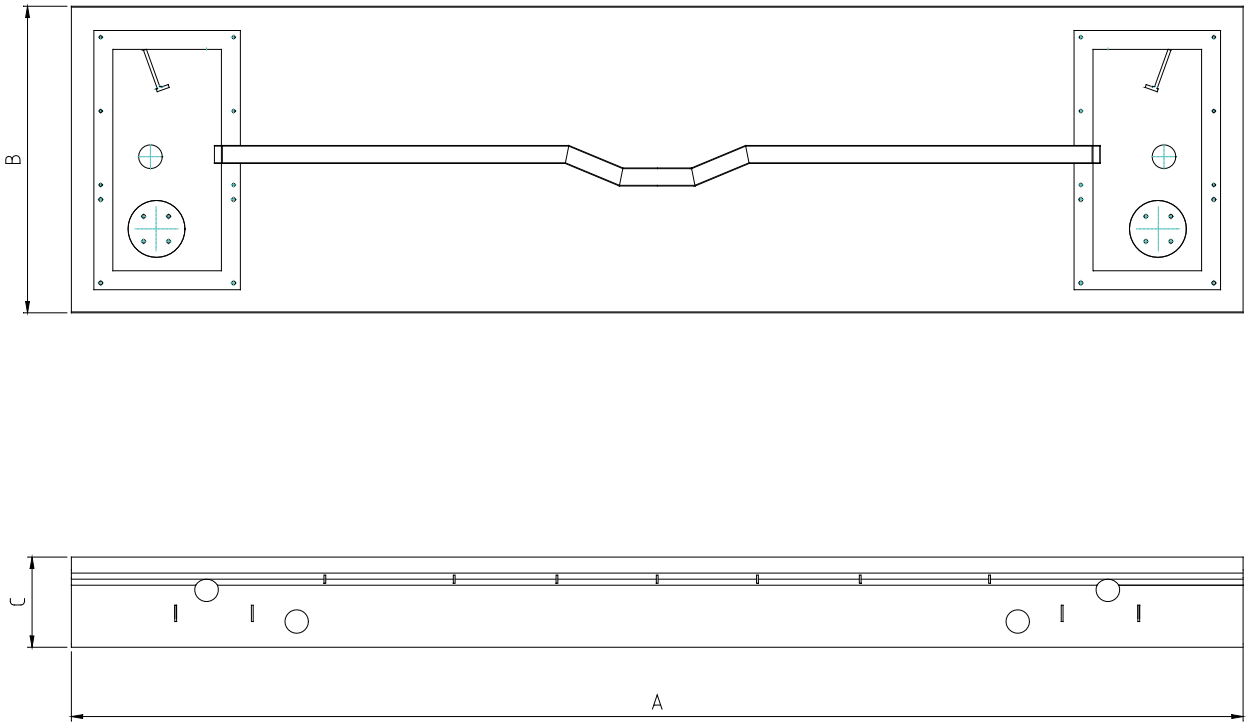


Figure 4.3: Over all dimmensions of the foundation

Hydraulic cylinders:

Qty	Type	Volume bottom side	Volume piston side
2	40/25, stroke 300 mm	377 cc	230 cc

4.2 Main components

Figure 4.4 shows the main components of the Speedgate OA.

The Speedgate OA consists of the following components:

1. Foundation frame.
2. Right column.
3. Right outer wing.
4. Right inner wing.
5. Left inner wing.
6. Left outer wing.
7. Left column.
8. Hinge.
9. Guiding wheel.
10. Top plate.
11. Proximity switches and electrical connection board.

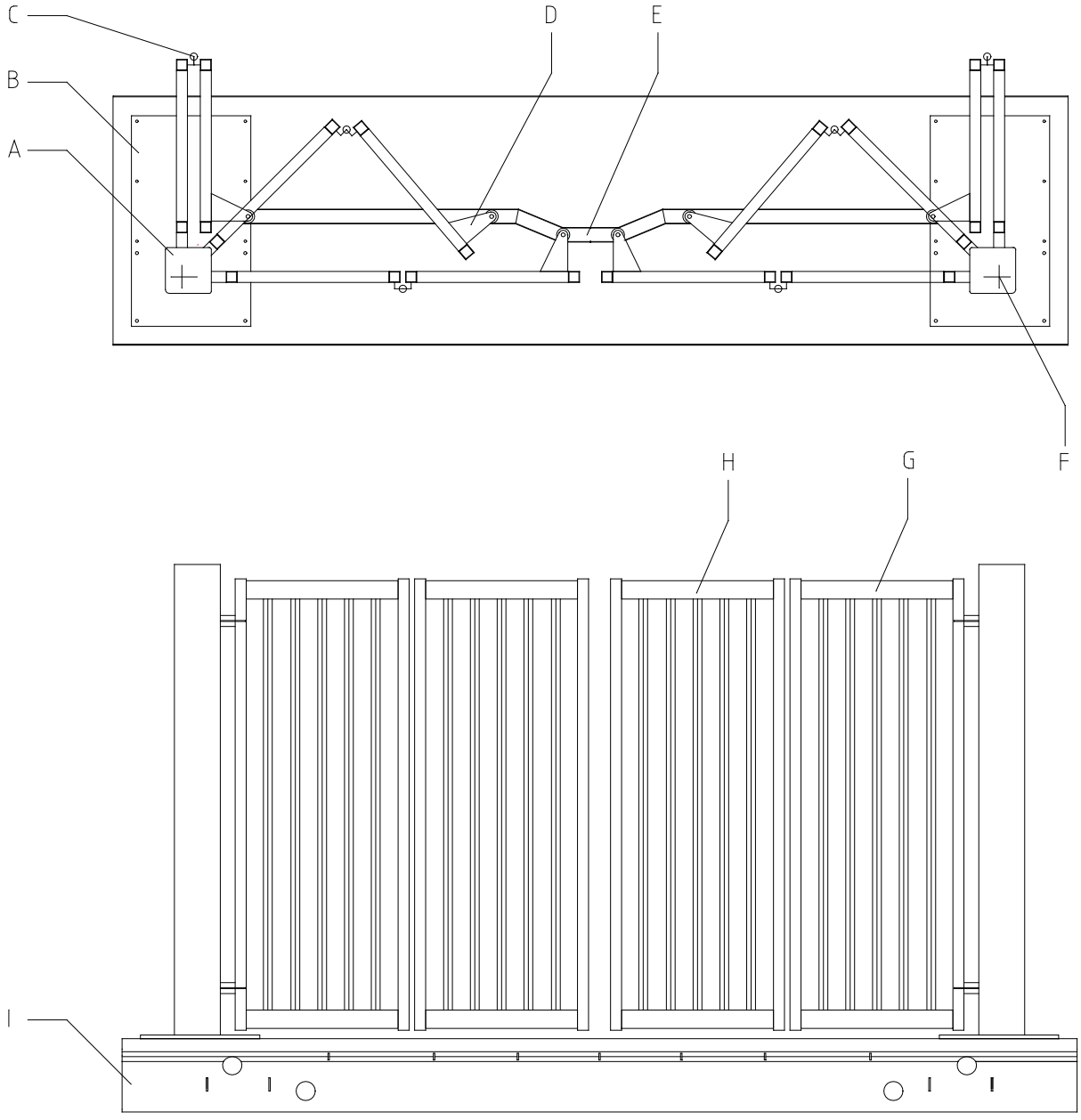


Figure 4.4: Main parts of the Speedgate OA

4.3 Product identification

The type plate shown in figure 4.5 contains the following data:
1. Type number
2. Serial number
3. Year of construction
4. Weight

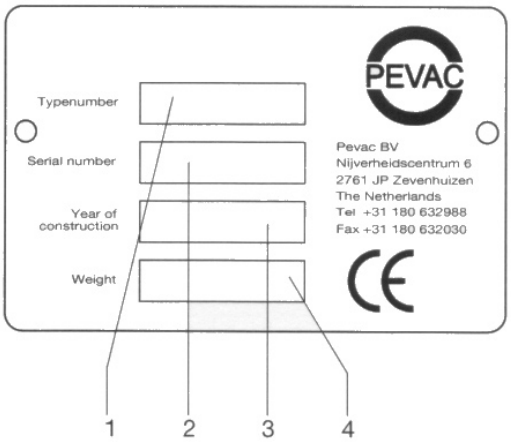


Figure 4.5: Product Identification

4.4 Principles of operation

According to the “fast open, fast close” principle, two wings can fold to the left and to the right hand side of the Speedgate. This provides a dynamic blockade of the terrain. Each wing is moved with a hydraulic cylinder to block a passage or to make the passage free. The arrow in the illustration (figure 4.6) indicates the “attack side”.

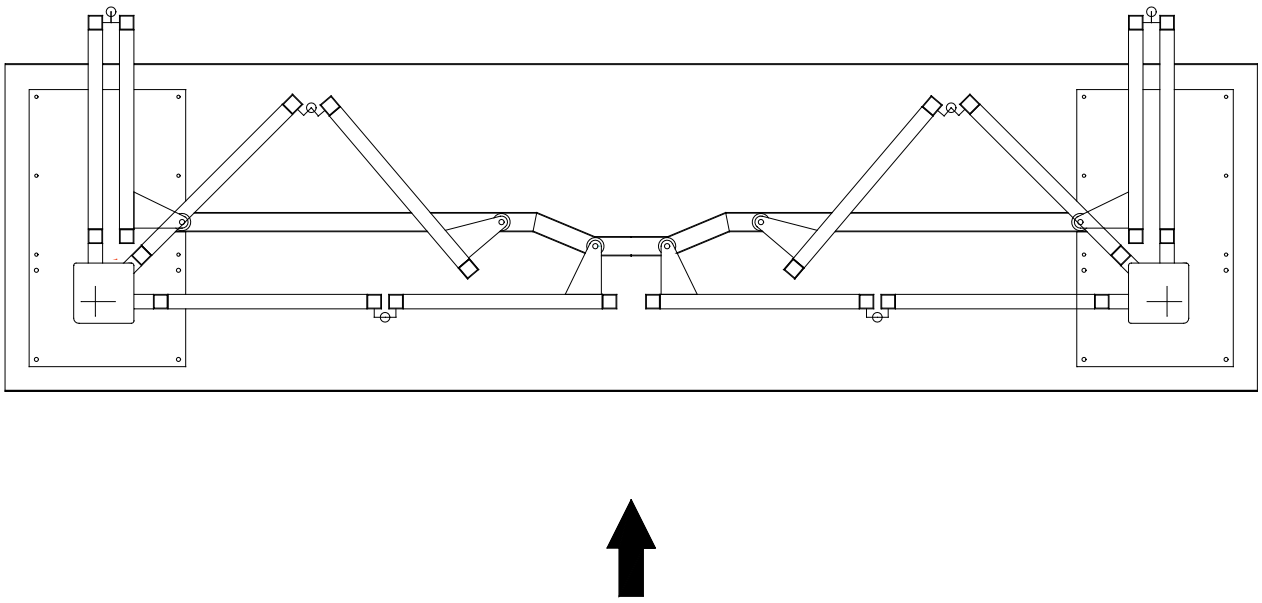


Figure 4.6: Attack side of Speedgate OA

There are four proximity switches mounted in the top of each column of the Speedgate OA. This makes a total amount of eight proximity switches. With the help of these switches, the following positions can be detected.
- Left wing open
- Left wing almost open
- Left wing almost closed
- Left wing closed
- Right wing open
- Right wing almost open
- Right wing almost closed
- Right wing closed

With the proximity switches it’s also possible to detect a fault.

The Speedgate OA can be, depending on the controller used, manually or automatically operated.

5 OPERATION AND USE

Depending on the manner in which the Speedgate OA is installed, a separate user manual for operation may be applicable. See the user manual included with the controller system.

6 PERIODIC INSPECTION BY OWN PERSONAL

To guarantee the safety and the proper functioning of the Speedgate OA maintenance is necessary.

Every week the following actions must be taken:

- Check the Speedgate OA for correct functioning.
- Check the visibility of the Speedgate OA.
- Remove dirt from the Speedgate OA.
- Check that the guiding rail is clear.

7 STORAGE AND TRANSPORT

Warning
Ensure that for lifting work, the strength of the hoisting belts or chains can handle the weight to be hoisted. For the weight of the foundation see the technical specifications in chapter 4.

Warning
Ensure that the foundation of the Speedgate OA hangs completely horizontally and in balance during hoisting.

7.1 Storage of the Speedgate OA

When storing the Speedgate OA, attention should be paid to the following points:
- Place the Speedgate OA on a flat and stable surface.
- Protect the Speedgate OA from dirt and moisture.
- Prevent damage to the zinc coating by placing the Speedgate OA on a wooden surface.

7.2 Transport of the Speedgate OA

Note
For the weight of the foundation, see the technical specifications in chapter 4.

Warning
Prevent damage to the powder coating and the zinc layer during transport.

Warning
Position the Speedgate OA on a wooden surface.

Order of working when transporting the foundation of the Speedgate OA:
- Pull the 2 hoisting straps trough the hoisting opening in the frame.
- Hoist the foundation of the Speedgate OA on the truck.
- Place the foundation of the Speedgate OA horizontally on the loading platform.
- Fasten the foundation of the Speedgate OA firmly on the truck, so that it cannot slide in any direction during transportation.

The same directions apply for unloading as for loading.

8 INSTALLATION

8.1 Installation preparation

Note
The hydraulic drive unit must be installed within a radius of 5 m from one of the columns of the Speedgate OA.

For successful installation you should prepare yourself as follows:

Danger
During the installation (and also during other work on the Speedgate OA), the hydraulic drive unit should always be switched off.

8.2 Installation conditions

Warning
The Speedgate OA can only be installed, inspected, maintained and/ or repaired by personnel who are qualified by Pevac BV.

At the place of installation, the necessary control cables and hoses must be present.

Depending on the road surface in which the Speedgate OA must be installed, it will be necessary, in accordance with the installation to make a pit and a trench in the road surface in:
- Asphalt hardening (see § 8.4), or
- Cobbled road (see § 8.5).

The hydraulic drive unit is mounted inside an installation cabinet, together with the control cabinet. A jacket sleeve for the cables and hoses goes from the installation cabinet to the one of the openings on the long sides of the foundation of the Speedgate OA. Also check drawing 4.1 and installation drawing fig. 8.1.

8.3 Materials to be used

For positioning the Speedgate OA, the following equipment / tools are necessary:
- Crane truck.
- Hoisting belts or chains.
- Diamond saw (only for asphalt or concrete hardening).
- Gravel and sand.
- Glass-fibre reinforced concrete.
- PVC jacket sleeve with connectors (ø 100 mm) for the hydraulic hoses and the electrical cable.
- Pull cord, to pull the cables and hoses through the jacket sleeve.
- PVC drain tube with sleeves (ø 100 mm) for the drainage of rainwater (if connection to the sewer is possible).
- Electrical connection (in the control room) with main switch.

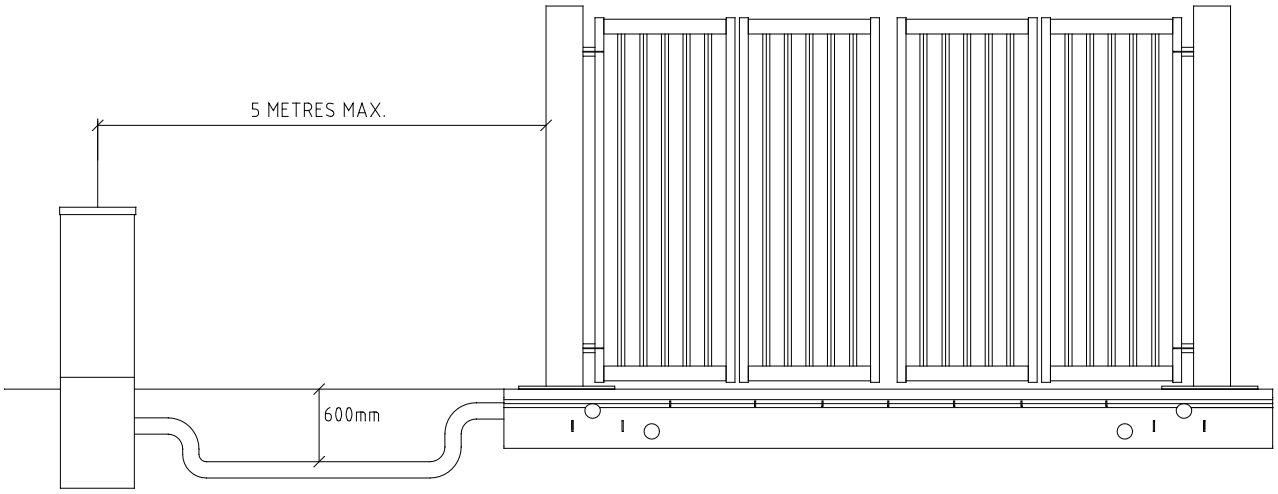
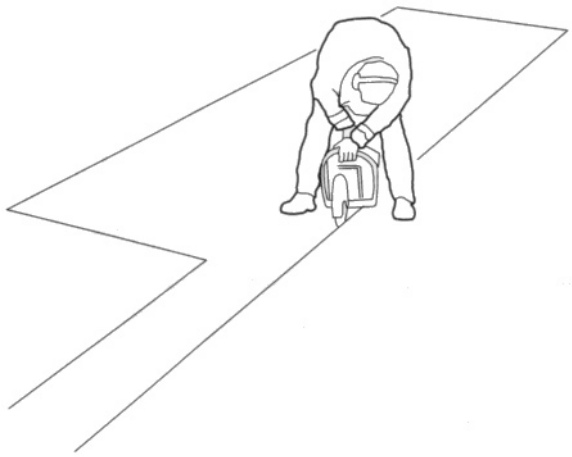


Figure 8.1: Standard configuration

8.4 Preparing the foundation frame

For the largest versions of the Speedgate OA, the foundation frame exists in two parts. These parts have to be mounted together on site.

- If necessary, mount the parts of the Speedgate OA foundation frame together.
- Put some steel reinforcement in from one part to the other. Make sure the reinforcement is in both parts at the same time.
- Put the foundation frame on a smooth and flat surface.
- Fill the frame with concrete. Use a needle-shaker machine to make sure the concrete is sealed well.
- Leave the foundation to dry according the guidelines of the concrete manufacturer.



8.5 Pit in asphalt or concrete

- Mark off the location on the road surface where the Speedgate OA should be positioned and where the jacket sleeve must be placed (see fig. 8.2). The sizes of the pit and the groove for the jacket sleeve are given in the following tables.
- Cut into the asphalt a few centimetres with a diamond saw (see also fig. 8.2).
- Dig away the asphalt in front of the Speedgate OA as well as in front of the jacket sleeve.
- Dig the pit for the Speedgate OA and the groove for the jacket sleeve sufficiently deep.

8.6 Pit in cobbled road

- Mark off the location on the road surface where the Speedgate OA should be positioned and where the jacket sleeve must be placed (see fig. 8.2). The sizes\ of the pit and the groove for the jacket sleeve are given in the following tables.
- Remove the cobbles at that location.
- Dig the pit for the Speedgate OA and the groove for the jacket sleeve sufficiently deep.

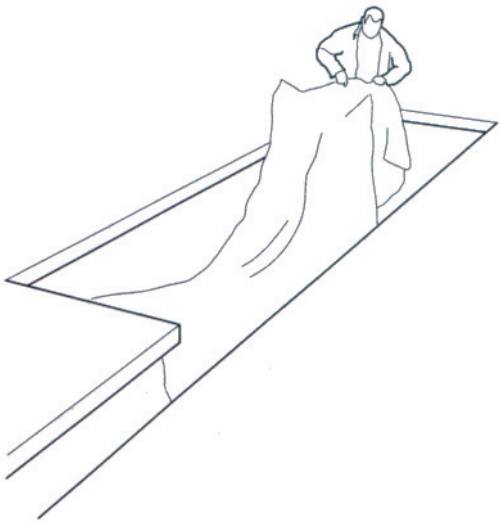
Note
The length of the groove depends on the distance between the pit and the control room. The maximum distance is 5 m.

Pit sizes:

Type	Length	Width	Dept
XXXX OA 2500	4300 mm	1900 mm	500 - 600 mm
XXXX OA 3000	4800 mm	1900 mm	500 - 600 mm
XXXX OA 3000	5300 mm	1900 mm	500 - 600 mm
XXXX OA 3000	5800 mm	1900 mm	500 - 600 mm
XXXX OA 3000	6300 mm	1900 mm	500 - 600 mm
XXXX OA 3000	6800 mm	1900 mm	500 - 600 mm
XXXX OA 3000	7300 mm	1900 mm	500 - 600 mm
XXXX OA 3000	7800 mm	1900 mm	500 - 600 mm
XXXX OA 3000	8300 mm	1900 mm	500 - 600 mm
XXXX OA 3000	8800mm	1900 mm	500 - 600 mm
GROVE	-	250 mm	700 - 800 mm

8.7 Placing Speedgate OA foundation

- Fit road cloth at the bottom of the pit (see fig. 8.3).
- Pour about 20 cm of sand in the pit and flatten it out.
- Pull the hoisting straps trough the hoisting openings of the foundation. (see chapter 4)
- Position the foundation in the pit so that:
  - It is completely level.
  - The top of the foundation is levelled with the road surface.
- Remove the hoisting straps.



8.8 Fitting the jacket sleeves

Warning
Do not use 90º bends in the corners of the jacket sleeve for the feed-through of the hydraulic hoses.

- Put the jacket sleeve in the groove, pass one end through the cable opening in the long side of the foundation and the other end in the wall feed-through in the base of the installation cabinet.
- Feed the pull cord through the jacket sleeve.
- Fit the drain tube for rain water drainage and connect it to the sewer at the openings in both short sides of the foundation.

8.9 Sealing the pit

- Fill up the space surrounding the Speedgate OA with glass-fibre reinforced concrete, in accordance with the concrete supplier's specifications.
- Smoothen the surface of the concrete.
- In the case of a cobblestone road, cover the opening above the concrete with previously removed cobblestones.
- Leave the concrete to harden.

Note
Put the cobblestones in the concrete. Do not use sand under the cobblestones.

8.10 Installation of the Speedgate OA

- Install the large bearings on the bottom of the steel pits in the foundation frame. Make sure that the grease-nipple points towards the top-plate. One bearing in each pit.
- Put the column on top of the foundation and insert the drive-axle in to the large bearing on the bottom. The drive-axle is already inside the column. Make sure that both hedges are between the columns.
- Level the columns and make sure that they are exact vertically.
- Mount the wings on the drive-axle. Put the cable of the safety-edges trough the openings to it can't be damaged.
- Insert the hydraulic mechanism in the pit and connect it on both sides.

8.11 Installation of hoses and cables

- Pull the four hydraulic hoses and the two electrical cables through the jacket sleeve. Use the pull cord in the jacket sleeve for this purpose.
  - Be certain that the hydraulic hoses in the Speedgate OA are sufficiently long.
  - Be certain that the cables in the Speedgate OA are sufficiently long.
- Pull the two longest hoses to the other pit trough the conduit that's inside the frame.
- Pull one cable to the other pit trough the conduit that's inside the frame.

Note
Be certain that there are no kinks in the hydraulic hoses or the cable.

9 HYDRAULIC SYSTEM

9.1 Hydraulic drive unit HB-OA

The Speedgate OA is driven by a special designed proportional hydraulic unit HB-OA. This unit is capable of driving one Speedgate with two wings. The speed of the wings is electronically detected and hydraulically adjusted.

The hydraulic unit has the following specifications.

Details hydraulic unit HB-OA:

Maximum working pressure	Pump capacity	Tank capacity
100 bar	11 cc / revolution	50 litre

Electrical details hydraulic unit HB-OA:

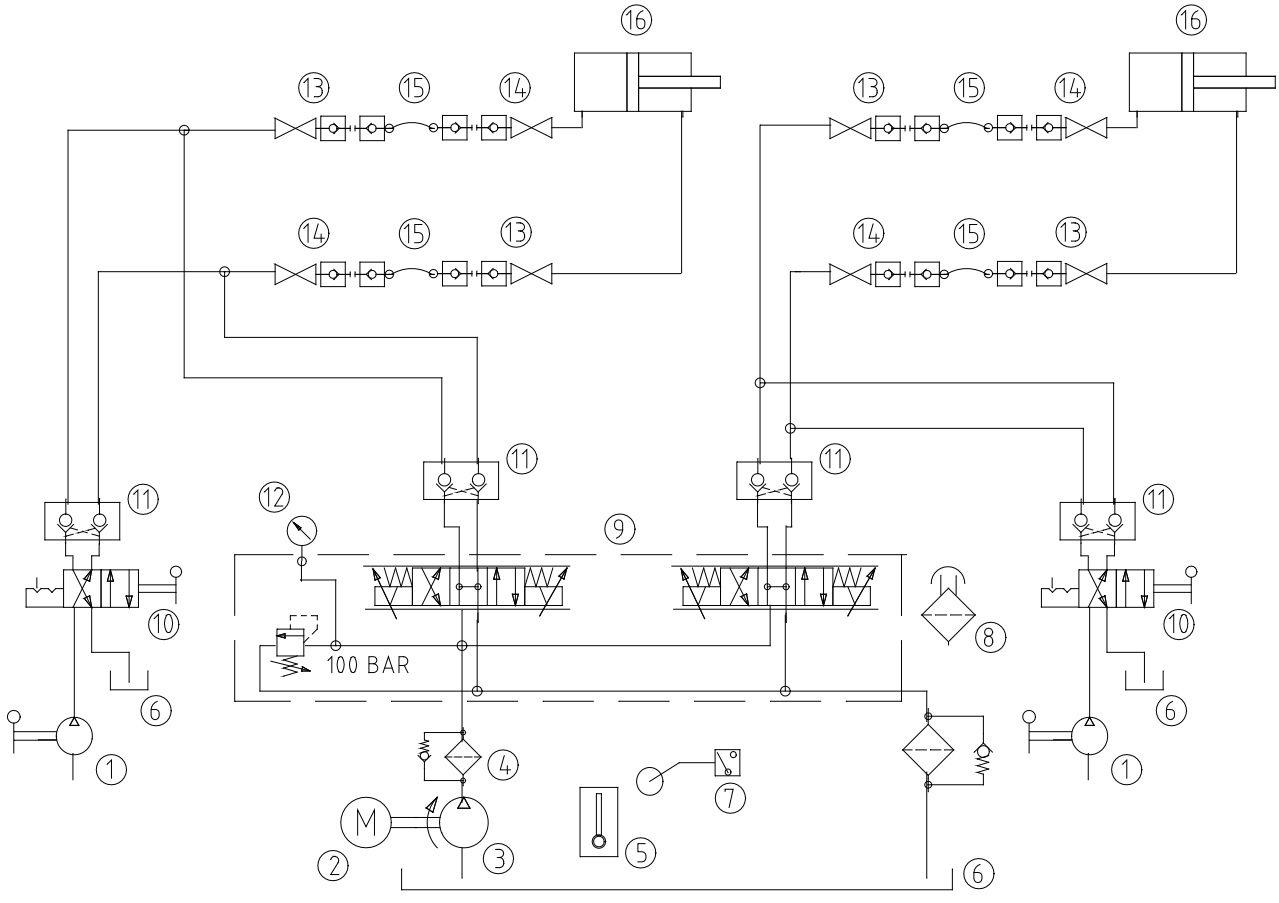
Motor power	Motor voltage
3 kW	400 VAC (3 phase)

For operation of the Speedgate OA, the hydraulic unit is equipped with electrically-operated proportional hydraulic valves for opening and closing. There is one valve for each wing.

For operation of the hydraulic drive unit see the manufacturer's directions.

9.2 Hydraulic system

The drawing below shows the hydraulic diagram of the hydraulic unit HB-OA. The components shown in the hydraulic diagram are mounted on the hydraulic drive unit or on the Speedgate OA. The table on the next page shows which components are used.



Standard components used on the hydraulic unit HB-OA:

Pos.	Description
1.	Hand pump
2.	Electric motor (3 phase)
3.	Gear pump
4.	Pressure filter
5.	Tank level indicator
6.	Oil tank
7.	Level switch
8.	Fill cap with filter
9.	Proportional valve unit with pressure protector system
10.	Hand pump valve
11.	Double return valve
12.	Return filter
13.	Quick coupler Female
14.	Quick coupler Male
15.	Hoses with Male and Female Quick coupler
16.	Cylinder
17.	Manometer with manometer valve

Open Speedgate:

If the controller gives the command 'Open Speedgate', the gear pump (3) begins to turn, through which the hydraulic oil becomes pressurized. As result, both proportional valves (9) are opened slightly, through which the top side (or rod side) of the cylinders (17) comes under pressure and the cylinders are driven inward. As result, the return valve (11) comes under pressure, through which it is opened and the oil, located on the bottom-side of the cylinders, flows back to the reservoir. Once the wings start moving, a sensor detects this condition and the valves (9) are opened more. This speeds up the Speedgate OA. When the wings are almost open, this condition is detected by another sensor and the valves (9) are closing a little. The speed of the wings is getting lower. When the wings has reached the end position, again this condition is detected and the valves (9) are closing and the pump (11) is switched off.

Close Speedgate:

If the controller gives the command 'Close Speedgate', the gear pump (3) begins to turn, through which the hydraulic oil becomes pressurized. As result, both proportional valves (9) are opened slightly, through which the under side (or bottom side) of the cylinders (17) comes under pressure and the cylinders are driven outwards. The wings start closing. As result, the return valve (11) comes under pressure, through which it is opened and the oil, located on the top-side of the cylinders (or rod side), flows back to the reservoir. Once the wings start moving, a sensor detects this condition and the valves (9) are opened more. This speeds up the Speedgate OA. When the wings are almost closed, this condition is detected by another sensor and the valves (9) are closing a little. The speed of the wings is getting lower. When the wings has reached the end position, again this condition is detected and the valves (9) are closing and the pump (11) is switched off.

9.3 Hand pump system

The hydraulic drive unit HB-OA is equipped with a hand pump system. The hand pump system makes it possible to operate the wings of the Speedgate OA with this hand pump in case of a power failure.

Note:
In order to operate the pump, a tube is slid in the pump.

To move the obstacle up and down, the hand pump valve (10) must be manually set in the correct position. Now the hand pump (1) can be operated so that the wings can be opened or closed. Each wing has a separate hand pump system.

10 ELECTRICAL INSTALLATION

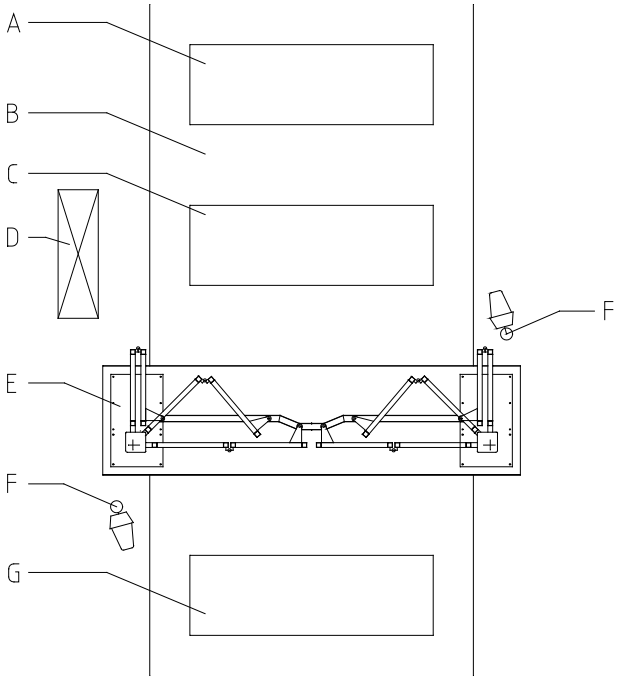
The Speedgate OA is hydraulically driven.
The hydraulic drive is electrically operated.

10.1 Hydraulic drive unit

The hydraulic drive unit consists of the following electrical components:
- Electric motor (3 phase)
- Level switch
- proportional valve for left wing
- proportional valve for right wing

10.2 Placing Speedgate OA

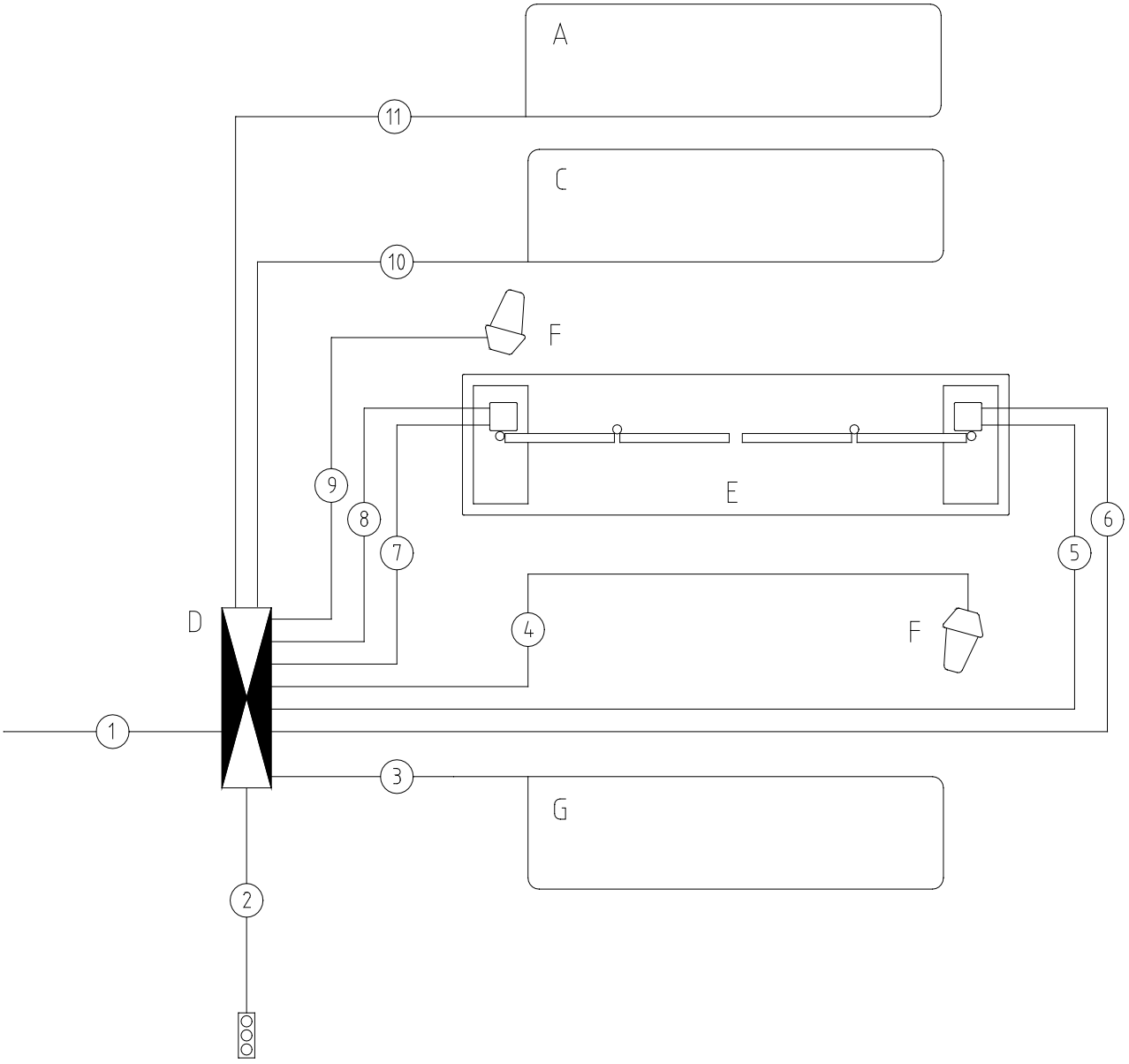
Fig. 10.1 shows a standard situation in which a Speedgate OA can be put into service.
In this situation, the Speedgate OA is suitable for two-way traffic. Traffic lights are also used in this situation. The installation can, in most situations, be adapted as desired.



Pos.	Description	Function
A.	Open detection loop (auto exit)	Automatic drive-out (auto-exit) Opens the Speedgate OA automatically in one direction.
B.	Driveway	
C.	Safety detection loop	Safety while closing and Automatic closing after the passage
D	Speedgate OA	
E.	Traffic light	Warning if the Speedgate OA is not completely open: Drive-through is not possible!
F.	Safety detection loop	Safety while closing and Automatic closing after the passage
G.	Installation cabinet with controller and hydraulic drive unit.	Control of the Speedgate OA.
H.	Push-button console	Operation of the Speedgate OA.

10.3 Cable diagram Speedgate OA

The drawing below shows the standard cabling diagram of the Speedgate OA. The positions in the figure are equivalent to the positions in fig. 10.1.



Cables and hoses for Speedgate OA controller from fig. 10.1:

Pos.	Cable type	From	To	Function
1.	Power cable - armoured, with tinner copper ground, 2,5mm (12 AWG)	Power Supply	Controller	3 phase + neutral + ground
2.	Signal cable - armoured and shielded, 5 twisted pairs, 0,8mm (18 AWG)	Controller	Push button console	Operation
3.	Hydraulic hose 3/8”	Hydraulic unit	Speedgate OA	Open left wing
	Hydraulic hose 3/8”	Hydraulic unit	Speedgate OA	Close left wing
	Hydraulic hose 3/8”	Hydraulic unit	Speedgate OA	Open right wing
	Hydraulic hose 3/8”	Hydraulic unit	Speedgate OA	Close right wing
	Signal cable - armoured and shielded, 4 twisted pairs, 0,8mm (18 AWG)	Controller	Speedgate OA	Sensors left column
	Signal cable - armoured and shielded, 4 twisted pairs, 0,8mm (18 AWG)	Controller	Speedgate OA	Sensors right column
4.	Power cable - armoured, with tinned copper ground wire, 3 conductors, 1,5mm (14 AWG)	Controller	Traffic light	Red / Green
5.	Power cable - armoured, with tinned copper ground wire, 3 conductors, 1,5mm (14 AWG)	Controller	Traffic light	Red / green
6.	Signal cable - armoured and shielded, 1 twisted pair, 0,8mm (18 AWG)	Controller	Detection loop	Detection loop safety
7.	Signal cable - armoured and shielded, 1 twisted pair, 0,8mm (18 AWG)	Controller	Detection loop	Detection loop safety
8.	Signal cable - armoured and shielded, 1 twisted pair, 0,8mm (18 AWG)	Controller	Detection loop	Auto Exit

10.4 Electrical diagram Speedgate OA

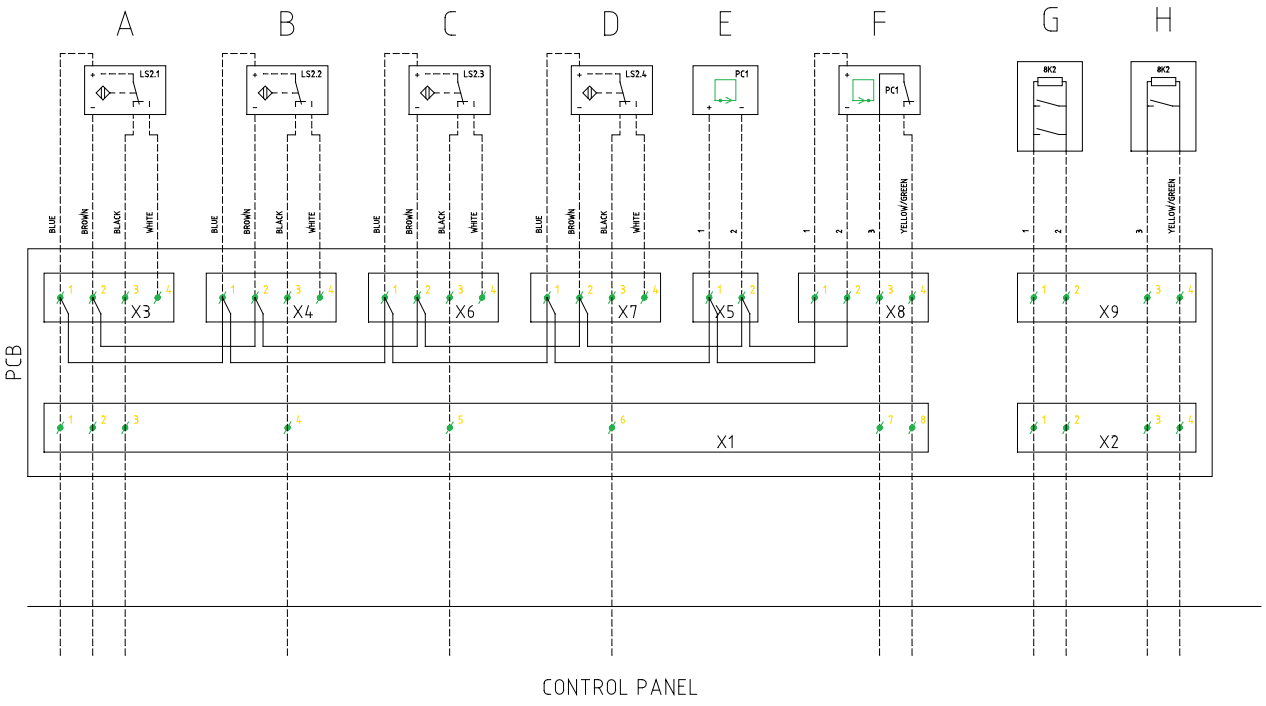
In fig. 10.3, the electrical diagram for the Speedgate OA is given. Figure 10.4 shows the print layout for the connections.

Connections for the Speedgate OA:

Pos.	Function	Label on print
X1	Control	CONTROLLER
X2	Control	CTRL
X3	Limit switch open	OPEN
X4	Limit switch almost open	ALM OPEN
X5	Photo electric transmit-ter	TRANSM
X6	Limit switch almost closed	ALM CL
X7	Limit switch closed	CLOSED
X8	Photo electric receiver	RECEIVER
X9	Safety edges	SAFETY

The colour coding is given in the following table:

Code	Wire colour	LED colour
BU	Blue	
BN	Brown	
BK	Black	
WT	White	
RD		Red



11 CONNECTION OF THE SPEEDGATE OA

This chapter describes how the Speedgate OA should be connected electrically and hydraulically.

11.1 Electrical connections

- Connect the controller cable to connection strip 'X1' of the Speedgate OA according to the table below. (see fig. 10.3). Thereafter, check the connections carefully.

Terminal	Function
1	Feed voltage + 24 VDC
2	Ground
3	Wing open (contact proximity switch)
4	Wing almost open (contact proximity switch)
5	Wing almost closed (contact proximity switch)
6	Wing closed (contact proximity switch)
7	Photo sensor in
8	Photo sensor blocked (contact photo electric sensor)

11.2 Placing and connecting the controller box

The placement and connection of the controllers and the push button panel is dependant on the chosen installation and the control. The installation thereof is given in the accompanying documentation.

11.3 Bleeding air from the hydraulic hoses

Danger

- During connection of the hydraulic hoses, the hoses MUST NOT be under pressure.
- The electrical mains power must be switched off.

Warning

When working with hydraulic systems be extremely clean: sand and other contaminants can lead to failures and excessive wear of the system.

Warning

Ensure that the oil tank is always full.

Note

For air bleeding, see also the user manual for the hydraulic drive unit.

- Connect the hydraulic hoses in the Speedgate OA to one another.
- Connect the outlets of the hydraulic drive unit together.

Careful

The hydraulic hoses supplied by Pevac are already filled with hydraulic oil. For this reason fasten the hoses well, so that no oil can escape from the hoses, which would cause difficulty in the bleeding of air.

- Open the valve of one of the hand pumps.
- Use the hand pump for several minutes so that all the air is forced out of the hoses.
- Open the valve of the other hand pump.
- Use the second hand pump for several minutes so that all the air is forced out of the hoses.
- Loosen the hoses of the Speedgate OA from one another.
  - In order to detach the hoses, the ring of the quick-coupling must be retracted.

11.4 Hydraulic connections

If the hydraulic hoses are free of air, the Speedgate OA can be connected as follows:

- Connect the hoses to the quick-connectors on the cylinder in the Speedgate OA.
- Loosen the swivel couplings on the cylinders (as a rule, it is sufficient to loosen the couplings two turns).

Careful
The screw threads in the hydraulic cylinders must not be damaged!

- Let the wings of the Speedgate OA open very slowly by use of the hand pump.
- Re-tighten the swivel couplings on the rod side of the cylinders.
- Let the wings of the Speedgate OA close very slowly by use of the hand pump.
- Re-tighten the swivel couplings on the bottom side of the cylinders.
- Check the oil level once again.

Connections for the Speedgate OA:

Connector type	Function
Male	Open the wing
Female	Close the wing

12 COMMISSIONING

12.1 Adjusting the Speedgate

Danger
Before the Speedgate OA is tested:
- There can be no cars on or in the vicinity of the Speedgate OA;
- The Speedgate OA must be cleared of obstacles, such as materials that have been used for the assembly;
- Personnel must be out of the vicinity of the Speedgate OA.

12.1.1 All wings in one line while closed

Check if the wings are in one line when closed hydraulically. If the wings are bended, the hydraulic cylinder has to be adjusted. The following steps have to be taken:

- Un-tighten the four bolds of the cylinder bracket on the bottom side.
- Adjust the cylinder by the centre-bold until the wings are in one line.
- Tighten and lock the bolds.

12.1.2 Height of the wings

Check if the wings of the Speedgate are on the same level. If one of the wings is lower than the other, the following steps have to be taken:

- Un-tighten the ring of the bearing on the bottom of the pit.
- Lift the lowest wing so it's as high as the other wing.
- Tighten and lock the ring on the large bearing.

12.1.3 Bending of the wings

Check if the wings are bending down to the concrete foundation in the closed position. If so, the following steps have to be taken:

- Un-tighten the bolds of the top bearing inside the column.
- Force the drive axle to left or right until the wings are horizontally.
- Tighten and lock the bolds of the bearing.
- If necessary the large bearing can also be adjusted.

12.1.4 Adjusting the top of the wings

Check if the wings are in one line when closed. Make sure that one of the wings is not bended to the inside or the outside. If the wings are not in one line, the following steps have to be taken:

- Un-tighten the bolds of the top bearing inside the column.
- Force the drive axle to the inside or outside until the wings are in one line.
- Tighten and lock the bolds of the bearing.
- If necessary the large bearing can also be adjusted.

12.2 Testing the functionality

In the following description, the functions of the valves and proximity switches refer to their functions. The names that are used, are shown in the table below.
The operation/functioning of the Speedgate OA is as follows:

12.2.1 Preventing access

- Push the button: “Close”: The motor of the hydraulic drive unit is engaged and the valve CLOSE is opened. This allows pressure into the hydraulic cylinders that causes the wings to close
- If the wings are almost open, limit switch ALMOST OPEN detects this condition. The valve CLOSE is opened more and the wings will move faster.
- If the wings are almost closed, limit switch ALMOST CLOSED detects this condition. The valve CLOSE is closing and the wings will slow down.
- If the wings are closed, limit switch CLOSED detects this condition. The valve CLOSE is closed and the motor is switched off.

The passage is closed.

12.2.2 Permitting access

- Push the button: “Open”: The motor of the hydraulic drive unit is engaged and the valve OPEN is opened. This allows pressure into the hydraulic cylinders that causes the wings to open.
- If the wings are almost closed, limit switch ALMOST CLOSED detects this condition. The valve OPEN is opened more and the wings will move faster.
- If the wings are almost opened, limit switch ALMOST OPEN detects this condition. The valve OPEN is closing and the wings will slow down.
- If the wings are opened, limit switch OPEN detects this condition. The valve OPEN is closed and the motor is switched off.

The passage is now clear.

Note:
For the specific operation and the customer adapted controller panel, see the separate user manual for the customer adapted Speedgate OA.

12.3 Checking the operation

- Check all hydraulic connections for leaks:
  - During movement of the wings;
  - When the Speedgate OA is closed;
  - When the Speedgate OA is opened.
- Check if the proximity switches detect in the correct position.
- Check if all signals of the electronic system function.
- Check that the Speedgate OA is functioning properly after installation.

12.4 Final assembly

- Fit the Speedgate OA cover plates.
- Fit the Speedgate OA top covers on the columns.
- Fit the Speedgate OA hedges.

The Speedgate OA is now ready for use.

Type of detector	Name	Function
Proximity switch	Limit switch open	Detects open position of the wing
	Limit switch almost open	Detects almost open position of the wing
	Limit switch almost closed	Detects almost closed position of the wing
	Limit switch closed	Detects closed position of the wing
Valve	Valve open	Opening the wing
	Valve close	Closing the wing

Table 11.4: Name of sensors

13 GENERAL INSPECTION AND MAINTENANCE

Warning
- When working on the Speedgate OA, disconnect the mains power!
- When working on the Speedgate OA, close off the hydraulic pressure.

To guarantee the safety and the proper functioning of the Speedgate OA, maintenance by Pevac B.V. qualified personnel is necessary.

Note
See the Pevac B.V. maintenance book for the first maintenance.

13.1 Service intervals

For the first time:
A month after installation.

After that:
Three months after installation.

Consequently every:
Six months.

Work to be carried out:
- General visual check.
- Cleaning the Speedgate OA and the mechanism.
- Lubrication of the cylinder eyes.
- Checking the attachment of bolts and nuts, specifically those of turning elements.
- Checking the hinges of the wings for play and, as necessary, replacing the plastic coating.
- Updating the Pevac B.V. log card. On this card, the corrective measures should also be recorded.
- If the log card is full, please send it to Pevac BV in Zevenhuizen. You will then receive a new log card by return mail.

14 THE SPEEDGATE OA AND THE ENVIRONMENT

Through the use of biodegradable hydraulic oil, the environmental impact can be reduced. Take care, nonetheless, that in the case of leakage the oil cannot enter the environment directly. The use of an oil-leak pan in the installation cabinet can prevent this from occurring.

The installed hydraulic drive is equipped with an electronic level detector. This allows early detection of any possible leakage so that measures can be taken in a timely manner.

In addition, the hydraulic tank is provided with a sight glass. This permits checking of the oil level.

14.1 End of life span

The Pevac B.V. Speedgate OA can have a technical life span of 15 years under normal circumstances, with normal use and good maintenance.

Environment
At the end of the life span the Terrain Blocker TB should be disposed of as follows.

Part	Manner of processing
Foundation frame	Scrap
Columns	Scrap
Wings	Scrap
Hydraulic drive unit	Revision
Hydraulic oil	Chemical waste
Plastic parts	Container for plastic
Electrical components	Special recycling compa-nies
Remains	Scrap

15 CE DECLARATION

EC DECLARATION OF CONFORMITY
(according to annex II A of the machine guideline)

We, Pevac BV
Nijverheidscentrum 6, Zevenhuizen,
The Netherlands,

declare totally under own responsibility, that the products:

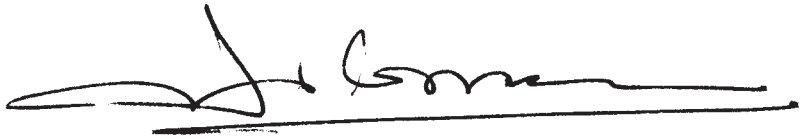
Speedgate	2000 OA 2500,	2500 OA 2500,	3000 OA 2500
	2000 OA 3000,	2500 OA 3000,	3000 OA 3000
	2000 OA 3500,	2500 OA 3500,	3000 OA 3500
	2000 OA 4000,	2500 OA 4000,	3000 OA 4000
	2000 OA 4500,	2500 OA 4500,	3000 OA 4500
	2000 OA 5000,	2500 OA 5000,	3000 OA 5000
	2000 OA 5500,	2500 OA 5500,	3000 OA 5500
	2000 OA 6000,	2500 OA 6000,	3000 OA 6000
	2000 OA 6500,	2500 OA 6500,	3000 OA 6500
	2000 OA 7000,	2500 OA 7000,	3000 OA 7000

which this declaration concerns, are in accordance with the following standards:

• NEN-EN 292-1 en NEN-EN 292-2; 1996	Safety of machines (basis concepts)
• NEN-EN 60204; 1995	electrical equipment of machines
• NEN-EN 4413; 1998	General rules for hydraulic systems

according to the determinations of:

- the machine guideline 89/392/EEG, amended by guidelines 91/368/EEG, 93/44/EEG, 93/68/EEG



G. Slotman
Director

The Netherlands, Zevenhuizen, July 2002